

# SEQUENCE LISTING

<110> IMAEDA, TAKAO

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SHIMAMURA, TAKASHI

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MURAMOTO, NOBUHIKO

<120> METHOD FOR PRODUCING ANTIMICROBIAL PROTEIN AND FUSION PROTEIN

<130> 208377US0

<150> JP2000-161090

<151> 2000-05-26

<160> 12

<170> PatentIn version 3.0

<210> 1

<211> 392

<212> DNA

<213> Hordeum vulgare

<220>

<221> CDS

<222> (1) .. (390)

<400> 1

gaa aag cat atg att gaa ggt cgt atg aaa agc tgc tgc cgt agc acc  
Glu Lys His Met Ile Glu Gly Arg Met Lys Ser Cys Cys Arg Ser Thr

1	5	10	15	
ctg ggt cgt aac tgc tat aac ctg tgc cgt gtt cgt ggt gcg cag aaa				96
Leu Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys	20	25	30	
ctg tgc gcg ggt gtt tgc cgt tgc aaa ctg acc agc agc ggt aaa tgc				144
Leu Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys	35	40	45	
ccg acc ggt ttt ccg aaa atg att gaa ggt cgt acg ctg gcg ctg gtt				192
Pro Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Thr Leu Ala Leu Val	50	55	60	
agc aac agc gat gaa ccg gat acc gtt aaa tat tgc aac ctg ggt tgc				240
Ser Asn Ser Asp Glu Pro Asp Thr Val Lys Tyr Cys Asn Leu Gly Cys	65	70	75	80
cgt gcg agc atg tgc gat tat atg gtt aac gcg gcg gcg gat gat gaa				288
Arg Ala Ser Met Cys Asp Tyr Met Val Asn Ala Ala Ala Asp Asp Glu	85	90	95	
gaa atg aaa ctg tat ctg gaa aac tgc ggt gat gcg tgc gtt aac ttt				336
Glu Met Lys Leu Tyr Leu Glu Asn Cys Gly Asp Ala Cys Val Asn Phe	100	105	110	
tgc aac ggt gat gcg ggt ctg acc agc ctg acc gcg tga tag gat ccg				384
Cys Asn Gly Asp Ala Gly Leu Thr Ser Leu Thr Ala Asp Pro	115	120	125	
gct gct aa				392
Ala Ala				

<210> 2

<211> 124

<212> PRT

<213> Hordeum vulgare

<400> 2

Glu Lys His Met Ile Glu Gly Arg Met Lys Ser Cys Cys Arg Ser Thr				
1	5	10	15	
Leu Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys	20	25	30	
Leu Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys	35	40	45	

Pro Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Thr Leu Ala Leu Val  
50 55 60

Ser Asn Ser Asp Glu Pro Asp Thr Val Lys Tyr Cys Asn Leu Gly Cys  
65 70 75 80

Arg Ala Ser Met Cys Asp Tyr Met Val Asn Ala Ala Ala Asp Asp Glu  
85 90 95

Glu Met Lys Leu Tyr Leu Glu Asn Cys Gly Asp Ala Cys Val Asn Phe  
100 105 110

Cys Asn Gly Asp Ala Gly Leu Thr Ser Leu Thr Ala  
115 120

<210> 3

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<212> PRT

<213> Hordeum vulgare

<400> 3

Asp Pro Ala Ala

<210> 4

<211> 1649

<212> DNA

<213> Hordeum vulgare

<220>

<221> CDS

<222> (1)..(1647)

<400> 4

gac aag cat atg att gaa ggt cgt aaa agc tgc tgc cgt agc acc ctg  
Asp Lys His Met Ile Glu Gly Arg Lys Ser Cys Cys Arg Ser Thr Leu  
1 5 10 15

48

ggt cgt aac tgc tat aac ctg tgc cgt gtt cgt ggt gcg cag aaa ctg Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys Leu 20 25 30	96
tgc gcg ggt gtt tgc cgt tgc aaa ctg acc agc agc ggt aaa tgc ccg Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro 35 40 45	144
acc ggt ttt ccg aaa atg att gaa ggt cgt tcg gat gtt gtc cag ctg Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Ser Asp Val Val Gln Leu 50 55 60	192
aag aag gac acc ttc gac gac ttc atc aag acg aat gac ctt gtt ctc Lys Lys Asp Thr Phe Asp Asp Phe Ile Lys Thr Asn Asp Leu Val Leu 65 70 75 80	240
gcc gaa ttc ttc gcg ccg tgg tgc ggt cac tgc aag gct ctc gcc ccc Ala Glu Phe Phe Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro 85 90 95	288
gag tac gag gag gct gcg acc aca ctg aag gag aag aac atc aag ctc Glu Tyr Glu Glu Ala Ala Thr Thr Leu Lys Glu Lys Asn Ile Lys Leu 100 105 110	336
gcc aag gtg gac tgc aca gag gag acg gac ctc tgc caa caa cat ggt Ala Lys Val Asp Cys Thr Glu Glu Thr Asp Leu Cys Gln Gln His Gly 115 120 125	384
gtt gag ggc tac ccg act ctc aag gtc ttc cgc ggc ctt gac aac gtc Val Glu Gly Tyr Pro Thr Leu Lys Val Phe Arg Gly Leu Asp Asn Val 130 135 140	432
tcc ccc tac aag ggc cag cgc aag gct gct gct atc acc tcg tac atg Ser Pro Tyr Lys Gly Gln Arg Lys Ala Ala Ala Ile Thr Ser Tyr Met 145 150 155 160	480
atc aag cag tct ctg ccc gcc gtg tcc gag gtc acg aag gac aac ctg Ile Lys Gln Ser Leu Pro Ala Val Ser Glu Val Thr Lys Asp Asn Leu 165 170 175	528
gag gag ttc aag aag gcc gac aag gcc gtc ctt gtc gcc tat gtg gat Glu Glu Phe Lys Lys Ala Asp Lys Ala Val Leu Val Ala Tyr Val Asp 180 185 190	576
gct tcc gac aag gcg tcc agt gag gtt ttc acc cag gtc gcc gag aag Ala Ser Asp Lys Ala Ser Ser Glu Val Phe Thr Gln Val Ala Glu Lys 195 200 205	624
ctg cgc gac aac tac ccg ttc ggc tcc agc agc gat gct gcg ctg gcc Leu Arg Asp Asn Tyr Pro Phe Gly Ser Ser Ser Asp Ala Ala Leu Ala 210 215 220	672
gag gct gag ggc gtc aag gct ccc gct atc gtc ctt tac aag gac ttt Glu Ala Glu Gly Val Lys Ala Pro Ala Ile Val Leu Tyr Lys Asp Phe 225 230 235 240	720
gat gag ggc aag gcg gtc ttc tcc gag aag ttc gag gtg gag gcg atc Asp Glu Gly Lys Ala Val Phe Ser Glu Lys Phe Glu Val Glu Ala Ile 245 250 255	768

gag aag ttc gcc aag acg ggc gcc acc ccg ctc att ggc gag att ggc	816
Glu Lys Phe Ala Lys Thr Gly Ala Thr Pro Leu Ile Gly Glu Ile Gly	
260 265 270	
ccc gaa acc tac tcc gac tac atg tcg gcc ggc atc cct ctg gcc tac	864
Pro Glu Thr Tyr Ser Asp Tyr Met Ser Ala Gly Ile Pro Leu Ala Tyr	
275 280 285	
att ttc gcc gaa acg gcc gag gag cgg aag gag ctc agc gac aag ctc	912
Ile Phe Ala Glu Thr Ala Glu Glu Arg Lys Glu Leu Ser Asp Lys Leu	
290 295 300	
aag ccg atc gcc gag gct cag cgc ggc gtc att aac ttt ggt act att	960
Lys Pro Ile Ala Glu Ala Gln Arg Gly Val Ile Asn Phe Gly Thr Ile	
305 310 315 320	
gac gcc aag gct ttt ggt gcc cac gcc ggc aac ctg aac ctg aag acc	1008
Asp Ala Lys Ala Phe Gly Ala His Ala Gly Asn Leu Asn Leu Lys Thr	
325 330 335	
gac aag ttc ccc gcc ttc gcc atc cag gag gtc gcc aag aac cag aag	1056
Asp Lys Phe Pro Ala Phe Ala Ile Gln Glu Val Ala Lys Asn Gln Lys	
340 345 350	
ttc ccc ttc gat cag gag aag gag atc acc ttc gag gcg atc aag gct	1104
Phe Pro Phe Asp Gln Glu Lys Glu Ile Thr Phe Glu Ala Ile Lys Ala	
355 360 365	
ttc gtc gac gac ttt gtc gcc ggt aag atc gag ccc agc atc aag tcg	1152
Phe Val Asp Asp Phe Val Ala Gly Lys Ile Glu Pro Ser Ile Lys Ser	
370 375 380	
gag ccg atc cct gag aag cag gag ggc ccc gtc acc gtc gtc gtt gcc	1200
Glu Pro Ile Pro Glu Lys Gln Glu Gly Pro Val Thr Val Val Val Ala	
385 390 395 400	
aag aac tac aat gag atc gtc ctg gac gac acc aag gat gtg ctg att	1248
Lys Asn Tyr Asn Glu Ile Val Leu Asp Asp Thr Lys Asp Val Leu Ile	
405 410 415	
gag ttc tac gcc ccg tgg tgc ggc cac tgc aag gcc ctg gct ccc aag	1296
Glu Phe Tyr Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro Lys	
420 425 430	
tac gag gag ctc ggc gcc ctg tat gcc aag agc gag ttc aag gac cgg	1344
Tyr Glu Glu Leu Gly Ala Leu Tyr Ala Lys Ser Glu Phe Lys Asp Arg	
435 440 445	
gtc gtc atc gcc aag gtt gat gcc acg gcc aac gac gtt ccc gat gag	1392
Val Val Ile Ala Lys Val Asp Ala Thr Ala Asn Asp Val Pro Asp Glu	
450 455 460	
atc cag gga ttc ccc acc atc aag ctg tac ccg gcc ggt gcc aag ggt	1440
Ile Gln Gly Phe Pro Thr Ile Lys Leu Tyr Pro Ala Gly Ala Lys Gly	
465 470 475 480	
cag ccc gtc acc tac tct ggc tcg cgc act gtc gag gac ctc atc aag	1488
Gln Pro Val Thr Tyr Ser Gly Ser Arg Thr Val Glu Asp Leu Ile Lys	
485 490 495	

ttc atc gcc gag aac ggc aag tac aag gcc gcc atc tcg gag gat gcc	1536
Phe Ile Ala Glu Asn Gly Lys Tyr Lys Ala Ala Ile Ser Glu Asp Ala	
500 505 510	

gag gag acg tcg tcc gca acc gag acg acc acc gag acg gcc acc aag	1584
Glu Glu Thr Ser Ser Ala Thr Glu Thr Thr Thr Glu Thr Ala Thr Lys	
515 520 525	

tcg gag gag gct gcc aag gag acg gcg acg gag cac gac gag ctc tga	1632
Ser Glu Glu Ala Ala Lys Glu Thr Ala Thr Glu His Asp Glu Leu	
530 535 540	

tag gat ccg gct gct aa	1649
Asp Pro Ala Ala	
545	

<210> 5

<211> 543

<212> PRT

<213> Hordeum vulgare

<400> 5

Asp Lys His Met Ile Glu Gly Arg Lys Ser Cys Cys Arg Ser Thr Leu	
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Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys Leu	
20 25 30	

Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro	
35 40 45	

Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Ser Asp Val Val Gln Leu	
50 55 60	

Lys Lys Asp Thr Phe Asp Asp Phe Ile Lys Thr Asn Asp Leu Val Leu	
65 70 75 80	

Ala Glu Phe Phe Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro	
85 90 95	

Glu Tyr Glu Glu Ala Ala Thr Thr Leu Lys Glu Lys Asn Ile Lys Leu	
100 105 110	

Ala Lys Val Asp Cys Thr Glu Glu Thr Asp Leu Cys Gln Gln His Gly	
115 120 125	

Val Glu Gly Tyr Pro Thr Leu Lys Val Phe Arg Gly Leu Asp Asn Val  
 130 135 140

Ser Pro Tyr Lys Gly Gln Arg Lys Ala Ala Ala Ile Thr Ser Tyr Met  
 145 150 155 160

Ile Lys Gln Ser Leu Pro Ala Val Ser Glu Val Thr Lys Asp Asn Leu  
 165 170 175

Glu Glu Phe Lys Lys Ala Asp Lys Ala Val Leu Val Ala Tyr Val Asp  
 180 185 190

Ala Ser Asp Lys Ala Ser Ser Glu Val Phe Thr Gln Val Ala Glu Lys  
 195 200 205

Leu Arg Asp Asn Tyr Pro Phe Gly Ser Ser Ser Asp Ala Ala Leu Ala  
 210 215 220

Glu Ala Glu Gly Val Lys Ala Pro Ala Ile Val Leu Tyr Lys Asp Phe  
 225 230 235 240

Asp Glu Gly Lys Ala Val Phe Ser Glu Lys Phe Glu Val Glu Ala Ile  
 245 250 255

Glu Lys Phe Ala Lys Thr Gly Ala Thr Pro Leu Ile Gly Glu Ile Gly  
 260 265 270

Pro Glu Thr Tyr Ser Asp Tyr Met Ser Ala Gly Ile Pro Leu Ala Tyr  
 275 280 285

Ile Phe Ala Glu Thr Ala Glu Glu Arg Lys Glu Leu Ser Asp Lys Leu  
 290 295 300

Lys Pro Ile Ala Glu Ala Gln Arg Gly Val Ile Asn Phe Gly Thr Ile  
 305 310 315 320

Asp Ala Lys Ala Phe Gly Ala His Ala Gly Asn Leu Asn Leu Lys Thr  
 325 330 335

Asp Lys Phe Pro Ala Phe Ala Ile Gln Glu Val Ala Lys Asn Gln Lys  
 340 345 350

Phe Pro Phe Asp Gln Glu Lys Glu Ile Thr Phe Glu Ala Ile Lys Ala  
 355 360 365

Phe Val Asp Asp Phe Val Ala Gly Lys Ile Glu Pro Ser Ile Lys Ser  
370 375 380

Glu Pro Ile Pro Glu Lys Gln Glu Gly Pro Val Thr Val Val Val Ala  
385 390 395 400

Lys Asn Tyr Asn Glu Ile Val Leu Asp Asp Thr Lys Asp Val Leu Ile  
405 410 415

Glu Phe Tyr Ala Pro Trp Cys Gly His Cys Lys Ala Leu Ala Pro Lys  
420 425 430

Tyr Glu Glu Leu Gly Ala Leu Tyr Ala Lys Ser Glu Phe Lys Asp Arg  
435 440 445

Val Val Ile Ala Lys Val Asp Ala Thr Ala Asn Asp Val Pro Asp Glu  
450 455 460

Ile Gln Gly Phe Pro Thr Ile Lys Leu Tyr Pro Ala Gly Ala Lys Gly  
465 470 475 480

Gln Pro Val Thr Tyr Ser Gly Ser Arg Thr Val Glu Asp Leu Ile Lys  
485 490 495

Phe Ile Ala Glu Asn Gly Lys Tyr Lys Ala Ala Ile Ser Glu Asp Ala  
500 505 510

Glu Glu Thr Ser Ser Ala Thr Glu Thr Thr Thr Glu Thr Ala Thr Lys  
515 520 525

Ser Glu Glu Ala Ala Lys Glu Thr Ala Thr Glu His Asp Glu Leu  
530 535 540

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<212> PRT

<213> Hordeum vulgare

<400> 6

Asp Pro Ala Ala  
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<210> 7

<211> 182

<212> DNA

<213> Hordeum vulgare

<220>

<221> CDS

<222> (1)..(180)

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Asp	Lys	His	Met	Ile	Glu	Gly	Arg	Met	Lys	Ser	Cys	Cys	Arg	Ser	Thr	
1				5					10					15		

ctg	ggc	cgt	aac	tgc	tat	aac	ctg	tgc	cgt	gtt	cgt	ggc	gcg	cag	aaa	96
Leu	Gly	Arg	Asn	Cys	Tyr	Asn	Leu	Cys	Arg	Val	Arg	Gly	Ala	Gln	Lys	
			20					25					30			

ctg	tgc	gcg	ggc	gtt	tgc	cgt	tgc	aaa	ctg	acc	agc	agc	ggc	aaa	tgc	144
Leu	Cys	Ala	Gly	Val	Cys	Arg	Cys	Lys	Leu	Thr	Ser	Ser	Gly	Lys	Cys	
		35					40					45				

ccg	acc	ggc	ttt	ccg	aaa	tga	tag	gat	ccg	gct	gct	aa				182
Pro	Thr	Gly	Phe	Pro	Lys			Asp	Pro	Ala	Ala					
	50							55								

<210> 8

<211> 54

<212> PRT

<213> Hordeum vulgare

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Asp	Lys	His	Met	Ile	Glu	Gly	Arg	Met	Lys	Ser	Cys	Cys	Arg	Ser	Thr
1				5					10					15	

Leu	Gly	Arg	Asn	Cys	Tyr	Asn	Leu	Cys	Arg	Val	Arg	Gly	Ala	Gln	Lys
			20					25					30		

Leu	Cys	Ala	Gly	Val	Cys	Arg	Cys	Lys	Leu	Thr	Ser	Ser	Gly	Lys	Cys
		35					40					45			

Pro Thr Gly Phe Pro Lys  
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<211> 4

<212> PRT

<213> Hordeum vulgare

<400> 9

Asp Pro Ala Ala  
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<210> 10

<211> 284

<212> DNA

<213> Hordeum vulgare

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<222> (1) .. (282)

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gac	aag	cat	atg	att	gaa	ggt	cgt	aaa	agc	tgc	tgc	cgt	agc	acc	ctg	48
Asp	Lys	His	Met	Ile	Glu	Gly	Arg	Lys	Ser	Cys	Cys	Arg	Ser	Thr	Leu	
1			5					10						15		

ggt	cgt	aac	tgc	tat	aac	ctg	tgc	cgt	gtt	cgt	ggt	gcg	cag	aaa	ctg	96
Gly	Arg	Asn	Cys	Tyr	Asn	Leu	Cys	Arg	Val	Arg	Gly	Ala	Gln	Lys	Leu	
		20					25						30			

tgc	gcg	ggt	gtt	tgc	cgt	tgc	aaa	ctg	acc	agc	agc	ggt	aaa	tgc	ccg	144
Cys	Ala	Gly	Val	Cys	Arg	Cys	Lys	Leu	Thr	Ser	Ser	Gly	Lys	Cys	Pro	
		35					40					45				

acc	ggt	ttt	ccg	aaa	atg	att	gaa	ggt	cgt	gag	acg	tcg	tcc	gca	acc	192
Thr	Gly	Phe	Pro	Lys	Met	Ile	Glu	Gly	Arg	Glu	Thr	Ser	Ser	Ala	Thr	
	50					55				60						

gag	acg	acc	acc	gag	acg	gcc	acc	aag	tcg	gag	gag	gct	gcc	aag	gag	240
Glu	Thr	Thr	Thr	Glu	Thr	Ala	Thr	Lys	Ser	Glu	Glu	Ala	Ala	Lys	Glu	
65				70					75						80	

acg gcg acg gag cac gac gag ctc tga tag gat ccg gct gct aa 284  
 Thr Ala Thr Glu His Asp Glu Leu Asp Pro Ala Ala  
 85 90

<210> 11

<211> 88

<212> PRT

<213> Hordeum vulgare

<400> 11

Asp Lys His Met Ile Glu Gly Arg Lys Ser Cys Cys Arg Ser Thr Leu  
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Gly Arg Asn Cys Tyr Asn Leu Cys Arg Val Arg Gly Ala Gln Lys Leu  
 20 25 30

Cys Ala Gly Val Cys Arg Cys Lys Leu Thr Ser Ser Gly Lys Cys Pro  
 35 40 45

Thr Gly Phe Pro Lys Met Ile Glu Gly Arg Glu Thr Ser Ser Ala Thr  
 50 55 60

Glu Thr Thr Thr Glu Thr Ala Thr Lys Ser Glu Glu Ala Ala Lys Glu  
 65 70 75 80

Thr Ala Thr Glu His Asp Glu Leu  
 85

<210> 12

<211> 4

<212> PRT

<213> Hordeum vulgare

<400> 12

Asp Pro Ala Ala  
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